WHAT IS CLAIMED IS:

1. A method of analyzing nuclides in a sample by the combination of multiple gamma-ray detection and radioactivation analysis, in which a pair of gamma-rays emitted from each of the nuclides in a sample radioactivated with particle rays such as neutrons or gamma-rays are measured with a multiple gamma-ray detector assembly.

2. The method according to claim 1, wherein a pair of gamma-rays emitted simultaneously from each of the nuclides in the radioactivated sample are measured simultaneously with the multiple gamma-ray detector assembly to construct a two-dimensional matrix, whereby the individual nuclides in the sample are measured discretely without any artificial separating step.

3. A method of analyzing radionuclides by multiple gamma-ray detection comprising the steps of:

measuring a plurality of gamma-rays emitted simultaneously from a number of radionuclides in a sample with a multiple gamma-ray detector assembly consisting of a plurality of gamma-ray detectors;

recording the energy information for the pair of gamma-rays from each nuclide in a computer;

analyzing the recorded data to construct a two-dimensional matrix plotting the energy of one gamma-ray on one of the two axes and the energy of the other gamma-ray on the other axis;

specifying each nuclide from a position plotted on

the matrix;

comparing the peak for each nuclide with a standard radiation source having known energy and intensity; and

measuring the content of each nuclide in the sample, thereby performing qualitative and quantitative analyses of each nuclide.